

WHAT IS CLAIMED IS:

1. A lithographic apparatus comprising:

a beam processing system for providing a beam of radiation along a beam path to a substrate, said beam processing system including at least one optical element that reflects or transmits radiation of said beam along said beam path;

an aperture screen with an opening for permitting the passing of said beam; and

a handling unit arranged to move said aperture screen to and from a position in said beam path for blocking out a portion of said beam from a remainder of said beam, said aperture screen having a test surface that is located adjacent said opening and arranged to receive at least a part of said portion of said beam that is blocked out from said remainder of said beam when said aperture screen is at said position, said test surface being made of a material that is sensitive, under influence of radiation from said beam, to chemical alterations that also affect said optical element under influence of radiation from said beam.

2. A lithographic apparatus according to Claim 1, wherein

an exposed surface of said optical element and said test surface are made of identical material.

3. A lithographic apparatus according to Claim 2, wherein

both said exposed surface of said optical element and said test surface are reflective for radiation of said beam.

4. A lithographic apparatus according to Claim 3, wherein

said test surface is arranged on said aperture screen so that said test surface makes an angle with respect to a main surface of said aperture screen, whereby said test surface reflects said beam outside of said remainder of said beam path.

5. A lithographic apparatus according to Claim 1, wherein

said aperture screen is substantially located in a pupil plane of said beam processing system.

6. A lithographic apparatus according to Claim 1, further comprising:

a storage element for storing said aperture screen and a plurality of additional aperture screens,

said handling unit being arranged to move a selected one of said aperture screen and said plurality of additional aperture screens back and forth between said storage element and said position in said beam path.

7. A lithographic apparatus according to Claim 6, wherein

each of said plurality of additional aperture screens includes a respective opening and a respective additional test surface of a material that is sensitive, under influence of radiation from said beam, to chemical reactions that affect said optical element under influence of radiation from said beam, each of said additional test surfaces being located adjacent to said respective opening of said respective one of said plurality of additional aperture screens on which said additional test surface is provided.

8. A device manufacturing method comprising:

generating a beam of radiation along a beam path to a substrate;

inserting an exchangeable aperture screen with an opening in the beam path to block out a portion of the beam from a remainder of the beam irradiating onto the substrate, the aperture screen including a test surface, the test surface receiving at least a part of the portion of the beam that is blocked out from the remainder of the beam when the aperture screen is at the position, the test surface being made of a material that is sensitive, under influence of radiation from the beam, to chemical alterations that also affect the optical element under influence of radiation from the beam;

exposing the test surface to radiation from the beam; and

analyzing the test surface for chemical alterations after exposing the test surface to radiation from the beam.

9. A device manufacturing method according to Claim 8, further comprising:

exposing a plurality of substrates to the beam during respective time periods with the aperture screen in the beam path with a cumulative exposure period of the aperture screen of at least ten hours before analyzing test surface.

10. A device manufacturing method according to Claim 9, wherein

a series of substrates is exposed successively, the plurality of substrates being part of the series, and substrates other than the plurality of substrates from the series of substrates being

exposed while the aperture screen has been moved out of the beam path.

11. A device manufacturing method according to Claim 10, further comprising:
positioning a further aperture screen, comprising a further test surface, in the beam path during exposure the substrates other than the plurality of substrates.
12. A device manufacturing method according to Claim 8, further comprising:
adjusting an operational parameter that affects an atmosphere near a surface of optical elements of a lithographic apparatus that generates the beam and applies patterned illumination to the substrate, the operational parameter being adjusted in response to a result of the analyzing.
13. A device manufacturing method according to Claim 8, further comprising:
forming each of an exposed surface of the imaging optical element and the test surface of a same material.
14. A device manufacturing method according to Claim 8, wherein
the inserting an aperture screen includes positioning the aperture screen substantially in a pupil plane of the beam processing system.
15. An aperture screen for use in a lithographic apparatus, said aperture screen comprising:
an opening for passing part of a beam; and
a test surface located adjacent said opening and arranged to receive part of the beam that is blocked out by said aperture screen, said test surface having a material that is sensitive, under influence of radiation from the beam, to chemical alterations that also affect optical elements of the lithographic apparatus under influence of radiation from the beam.
16. An aperture screen according to Claim 15, wherein
said test surface is reflective for radiation in the beam.
17. An aperture screen according to Claim 16, wherein
said test surface is arranged so that it makes an angle with a main surface of said aperture screen, to reflect the beam out of a beam path.